

Building Cost Efficiency into Project Design and Implementation

Time to think and do things differently

Building and infrastructure projects have evolved so significantly over the past few decades resulting in impactful changes in the way we construct, the cost of construction, and therefore the financing of projects. The combination of economic dynamics, changing social needs and to some extent frivolous decision-making has resulted in buildings becoming incredibly expensive to construct and often constantly needing adjustment to function efficiently. The economics of building has become as complex as its design making the development and construction process increasingly costly. This is the fundamental reason for the driving demand for cost-effective buildings.¹

The UK Government has taken a position by publishing a Construction Strategy and Infrastructure Cost Review Implementation Plan. The aim of this plan is to drive cost efficiency in the construction industry.² It is expected to result in a 20% reduction in cost of construction over four years, including potential savings of up to GBP3b annually. This covers both economic and infrastructure projects of which about 40% are delivered through the public sector.³

This edition of Real Estate Insight discusses some of the initiatives under the Cost Review Implementation Plan, on the premise that it is indeed time to do things differently in the construction industry in Nigeria.

The Construction Industry in Nigeria

Prior to Nigeria's financial sector reforms in 2008, the construction industry was said to have outgrown all other sectors of the economy, achieving double digit growth rates. In spite of this though, it is obvious that the industry is yet to realise its potential and contribute to economic growth in a significant manner. It accounted for 1.4% of national GDP in 2010,⁴ compared to a contribution to GDP of 4% in South Africa,⁵ 5% in Kenya,⁶ 13% in China⁷ and 10% in the UK.⁸ While Nigeria's GDP rose approximately 500 times its size since 1981, the construction sector has grown by just over one-fifth of GDP growth over the same time period.⁹

Construction costs are 50% more than in Brazil 15% more than in South Africa, and 2.4% more than in India,¹⁰ making the cost of construction one of the highest in emerging economies. The high statutory rates on property transactions, high and duplicated taxes (including the lack of tax rebates and incentives), cost of funds, persistent increases in the cost of building materials (of

which 70% is imported)¹¹ and the growing cost of labour all add up to make building development generally capital intensive. Above these is the seeming lack of value engineering activity throughout the development process. The resulting inefficiencies include large amounts of waste. Each year, the UK construction industry uses 6 tonnes of building materials per population head. Waste from materials production and construction amount to 150m tonnes per annum, 20% of which is new material.¹²

The cost of providing basic infrastructure continues to be a topic for debate as information which enables comparative studies is readily available. As an example, it was recently reported that a 2km 6-lane stretch of the on-going reconstruction of the 49.3km main artery in Lagos (project cost US\$450m)¹³ was completed at a cost of US\$32.3m.¹⁴ By comparison, an 8-lane 99km highway in India (Hungund Hospet Expressway) to be completed in 2011 has a project cost of US\$379.1 million.¹⁵ The 17-mile (blue line) Lagos light rail project was contracted at a sum of US\$3b;¹⁶ A similar project; the 20 miles Metro Light Rail project in Phoenix was built at US\$1.4 billion, i.e. an average of US\$70 million per mile run.¹⁷ Nigeria's capital city - Abuja's, Airport runway project was initially contracted at US\$320m. Following an investigation and some value engineering activities, the project cost was reduced by approximately 30%.¹⁸ These examples highlight the need for improved innovation in both the construction and infrastructure project development processes in Nigeria.

Internal Drivers of Increasing Costs

Construction cost in the UK is the 12th most expensive in the world.¹⁹ The reasons behind the soaring rise in the cost of delivering infrastructure projects in the UK, according to the Nigerian Society of Engineers are generally the same as for Nigeria.²⁰ Some of the reasons laid out include the inconsistency in implementation of investment programs, a lack of clarity and direction—more common with public sector projects, flawed tendering and contract award process, management of large infrastructure project and programmes within the lowest quoted budget rather than the lowest cost required for performance, over specification and tendency to apply unnecessary standards, interpretation and use of competitive process and lack of investment in skills required by industry.²¹



Figure 1: UK Construction
Source: This Is Money.co.uk

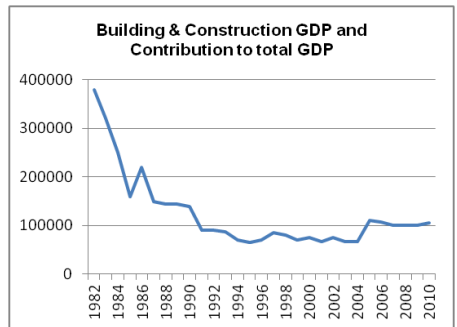


Figure 2: Nigerian Construction Industry Contribution to GDP
Source: Vetiva - Construction Industry Outlook

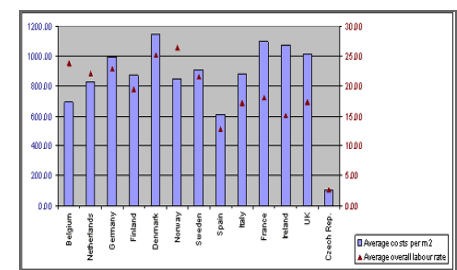


Figure 3: Construction Costs Across Europe
Source: BWA Benchmarking Construction Industry In The EU Member States

The UK's Cost Review Implementation Plan

Construction Excellence (a UK construction industry membership organisation) and Infrastructure UK (an independent body set up to monitor and manage infrastructure project budgets (GBP200 billion) for the next 5 years) have created individual strategic plans for change and are currently driving the objectives of the plan. Top of their agenda is to develop a more cost efficient construction industry and a reformed public sector construction procurement process.

Key targets over the period include a reduction in construction cost by 20%, reduction in the duration of infrastructure project processes and programmes by 15%, construction delivery time by 35% using the Construction Integration Toolkit, achieving 18% savings on capital expenditure as well as a 20% increase in cost predictability. The main objectives of the plan is to enable government and private infrastructure providers work with the construction supply chain to develop new business models to improve productivity, achieve better chain integration and promote innovation and growth.²²

Early success and quick wins have already been recorded through this initiative. In the first instance, there is a heightened drive by service providers for innovation, cost efficiency and more effective ways to render services, driving competitiveness and a positive influence in realising the government's vision. The outcome of this is revealed in a report which shows that contractors are willing to accept lower profit margins to secure projects in an increasingly competitive environment. Construction costs are reported to be down by more than 20% below their peak price in mid 2008.²³ Recently, following value engineering exercises, the Olympic Delivery Authority has reported a GBP35m (US\$56.7m) cost reduction in the on-going Olympic village project, which is about 80% complete.²⁴

Adopting A Strategy of Efficiency and Competitiveness in the Construction Industry

Nigeria is currently ridden with a huge infrastructure gap (estimated at over US\$200 billion)²⁵ across core sectors especially in housing, transportation and power. As with the UK Government (and other Governments across the globe), Nigeria is investing, and plans further major investments in infrastructure in fulfilment of its Vision 2020 Agenda.²⁴ The ability to set and implement policies that deliberately create efficiencies through the entire development chain is crucial to achieving its objectives.

The three tiers of government will need to tackle the various internal challenges that lead to poor budgeting and controls. It needs to champion the drive for free flow of information, improved and consistent standards both its infrastructure procurement processes as well as in construction industry.

Several initiatives, contained in the UK Infrastructure Cost Review Implementation Plan are worthy of review and could be adopted as the sector appears set to do things different in order to become a more competitive environment:

Improve delivery: The plan explores ways to remove wasteful processes, strengthens the skills and know-how of procurement officers and supports the supply chain by setting planning, safety and design standards and procurement policies.

Achieve certainty and continuity of pipeline: The aim is to extend investment programs across regulatory review periods, engage all relevant government bodies at all levels to commit to longer programs, plan for set cost reduction targets and encourage private sector contractors involvement in trade skills and supply chain development to improve efficiency in the public sector processes.

Establish clearer distinction between project teams: The initiative aims to develop measures to implement effective leadership and governance. It allows competent individuals and bodies make key decisions and provides clear incentives to achieve greater productivity.

Instil greater discipline to the commissioning of infrastructure projects: This promotes greater use of outcome-based specification and does away with unnecessary prescription of standards. It looks at the benefits of separate management of contingency budgets, outside of the Promoter, to improve availability and transparency. This includes developing cross-sector access to international benchmarks for public procurement processes.

Reduce the direct cost of construction by encouraging collaborative efforts between government and industry and promoting effective supply chain integration. The plan also mandates site project management supervision, improved standardisation and processes around change control under preferred standard forms for infrastructure and considers ways to avoid the escalation of claims culture.

References

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Nation	Population (millions)	Area (m2)	Stock of Infrastructure				
			Telecom	Electricity	Rail	Roads	Airport
Netherlands	16.72	41,543	27.23	91.7	28.11	135,470	22
Brazil	179.1	8,514,877	191.78	86,020	28857	1,751,868	71.8
Turkey	96.81	783,562	83.32	18,900	8697	462,951	90
India	1,166.08	3,287,263	464.84	76,170	63327	3,316,425	251
Nigeria	140	923,768	64.27	3,000	4500	199,200	22

Figure 4: Global Infrastructure Stock
 Source: ICRC Vision Led Infrastructure Development for Nigeria

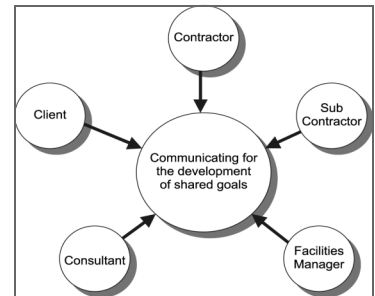


Figure 6: Supply Chain Management
 Source: Emerald—Building Trust In Construction Projects



Figure 6: Proposed Development of the Lekki-Ikoyi Bridge In Lagos
 Source: Nigeria's Infrastructure Deficit and Our Future,